IN THE CLAIMS:

Please amend claims 1 and 5-7 and cancel claim 4 without prejudice as follows:

1. (Currently amended) A method for compensating a rotational position error of a robot cleaner comprising:

detecting an offset value of a sensor for detecting a rotational speed of a robot cleaner;

compensating the detected offset value; and

correcting a rotational position of the robot cleaner on the basis of the compensated offset value,

wherein compensating the offset value comprises obtaining an average value of the detected offset values and a standard deviation, averaging the noise-removed offset value on the basis of the average value and the standard deviation, and determining the averaged offset value as a new offset value.

2. (Original) The method of claim 1, wherein the sensor is a gyro sensor

3. (Original) The method of claim 1, wherein, in the step of detecting an offset value, an offset value of the sensor is detected whenever the robot cleaner temporarily stops.

4. (Canceled)

5. (Currently amended) The method of ~~claim 4~~claim 1, wherein the average value and the standard deviation is calculated by an equation of

$$m_{G,1} = \frac{\sum_{i=1}^{N} G_i}{N}, \ \sigma_{G,1}{}^2 = \frac{\sum_{i=1}^{N}(G_i - m_{G,1})^2}{N},$$

wherein $m_{G,1}$ is an average value of the output values of the gyro sensor, 'N' is the number of samplings of the gyro sensor, G_i is an output value of the gyro sensor, $\sigma_{G,1}$ is a standard deviation of the output value of the gyro sensor.

6. (Currently amended) The method of claim 1~~claim 4~~, wherein the new offset value is calculated by an equation of

$$G_{offset,new} = m_{G,2} = \frac{\sum_{i=1}^{N} G_i V_i}{\sum_{i=1}^{N} V_i}$$, wherein $m_{G,2}$ is an average value of the noise-removed offset values, G_i is an output value of the gyro sensor, and if $|G_i - m_{G,1}| < k_1 \cdot \sigma_{G,1}$, V_i is '1', while if $|G_i - m_{G,1}| \geq k_1 \cdot \sigma_{G,1}$, V_i is '0'.

7. (Currently amended) The method of claim 1~~claim 4~~, wherein the step of correcting a rotational position of the robot cleaner comprises:

calculating an angular velocities of the robot cleaner on the bass of the new offset value;

calculating the amount of rotation of the robot cleaner by accumulatively adding the calculated angular velocities; and

subtracting the calculated amount of rotation from the previous amount of rotation, and compensating the subtracted amount of rotation.

8. (Original) The method of claim 2, wherein the step of correcting the rotational position of the robot cleaner comprises:

calculating angular velocities of the robot cleaner on the basis of the compensated offset value of the gyro sensor;

calculating the amount of rotation of the robot cleaner by accumulatively adding the calculated angular velocities; and

subtracting the calculated amount of rotation from the previous amount of rotation, and compensating the subtracted amount of rotation.

9. (Original) The method of claim 2, wherein the step of compensating the offset value comprises:

obtaining an average value of the offset values detected by the gyro sensor when the robot cleaner temporarily stops and a standard deviation; and

averaging the average value and the standard deviation, and determining the averaged offset value as a new offset value.

10. (Original) The method of claim 2, wherein the step of correcting the rotational position of the robot cleaner comprises:

calculating angular velocities of the robot cleaner on the basis of the compensated offset value;

calculating the amount of rotation of the robot cleaner by accumulatively adding the calculated angular velocities; and

subtracting the calculated amount of rotation from the previous amount of rotation, and compensating the subtracted amount of rotation.

11. (Original) A method for compensating a rotational position error of a robot cleaner comprising:

detecting an offset value of a gyro sensor after stopping a robot cleaner for a predetermined time when the robot cleaner is in an offset compensation mode;

obtaining an average value of the detected offset values and a standard deviation;

averaging the noise-removed offset value on the basis of the average value and the standard deviation;

determining the averaged offset value as a new gyro offset value; and

compensating a rotational position error of the robot cleaner on the basis of the new gyro offset value.

12. (Original) The method of claim 11, wherein the offset compensation mode is performed at a point when the robot cleaner starts a cleaning operation.

13. (Original) The method of claim 11, wherein the offset compensation mode is performed at a start point of a step of creating map information on a cleaning region and performing a cleaning in a certain pattern on the basis of the map information.

14. (Original) The method of claim 11, wherein the offset compensation mode is performed at a point when the robot cleaner starts moving to a charger.

15. (Original) The method of claim 11, wherein the offset compensation mode is performed at each predetermined time.

16. (Original) The method of claim 11, wherein the offset compensation mode is performed when a difference between the sample average value of the offset values of the gyro sensor and the detected gyro offset value is greater than a predetermined value.

17. (Original) The method of claim 16, wherein the sample average value of the gyro offset values is calculated by an equation of $G_{offset,sample} = \frac{\sum_{i=1}^{S} G_i}{S}$, wherein 'S' is the number of samples of output values of the gyro sensor that can be collected when the robot cleaner instantly stops, G_i is an output value of the gyro sensor when the robot cleaner instantly stops, and $G_{offset,sample}$ is an average value of output values of the gyro sensor when the robot cleaner instantly stops.

18. (Original) The method of claim 11, wherein the average value of the offset values and the standard deviation are calculated by an equation of $m_{G,1} = \frac{\sum_{i=1}^{N} G_i}{N}$, ${\sigma_{G,1}}^2 = \frac{\sum_{i=1}^{N} (G_i - m_{G,1})^2}{N}$, wherein $m_{G,I}$ is an average value of the output values of the gyro sensor, 'N' is the number of samplings of the gyro sensor, G_i is an output value of the gyro sensor, $\sigma_{G,I}$ is a standard deviation of the output value of the gyro sensor.

19. (Original) The method of claim 11, wherein the new gyro offset value is calculated by an equation of $G_{offset,new} = m_{G,2} = \frac{\sum_{i=1}^{N} G_i V_i}{\sum_{i=1}^{N} V_i}$, wherein $m_{G,2}$ is an average value of the noise-removed output values, G_i is an output value of the gyro sensor, and if $|G_i - m_{G,1}| < k_1 \cdot \sigma_{G,1}$, V_i is '1', while if $|G_i - m_{G,1}| \geq k_1 \cdot \sigma_{G,1}$, V_i is '0'.

20. (Original) The method of claim 11, wherein the step of compensating the rotational position error of the robot cleaner comprises:

calculating an angular velocities of the robot cleaner on the bass of the new offset value;

calculating the amount of rotation of the robot cleaner by accumulatively adding the calculated angular velocities; and

subtracting the calculated amount of rotation from the previous amount of rotation, and compensating the subtracted amount of rotation.

21. (Original) The method of claim 20, wherein the compensated amount of rotation is calculated by an equation of $\Psi_{n+1} = \Psi_{n+1,previous} - \Psi_{compensation} = \Psi_{n+1} - \frac{1}{2}(G_{offset,new} - G_{offset,old}) \cdot (t_{new} - t_{old})$, wherein ψ_{n+1} is the compensated amount of rotation of the robot cleaner, $\psi_{n+1,previous}$ is the amount of rotation of the robot cleaner before compensation, and $\psi_{compensation}$ is the rotation compensation amount of the robot cleaner.